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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/711,944	11/15/2000	Ken Ozawa	107878	8534

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EXAMINER

SONG, HOON K

ART UNIT PAPER NUMBER

2882

DATE MAILED: 08/08/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/711,944

Applicant(s)

OZAWA, KEN

Examiner

Hoon Song

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 6, 8-11, 18, 22 and 24-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 8-11, 18, 22 and 24-31 is/are rejected.
- 7) ☒ Claim(s) 18, 22, 29 and 31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Objections***

Claims 18, 22, 29 and 31 are objected to because they attempt to define a manufacturing process without setting forth any of the steps involved in the manufacturing process.

Claim 29 is objected to because there is insufficient antecedent basis for "the wafer" in the claim.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6, 8-11, 18, 22 and 24-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Takahashi (US 5526093).

Regarding claim 1, Takahashi teaches a method that exposes a second object (9) by transferring a pattern of a first object (7) with an exposure beam, in which a plurality of divided regions having different target exposure levels defined on said second object (figure 2), are successively exposed by emitting pulses of the exposure beam from a pulsed energy source and moving said first object and said second object synchronously with respect to the exposure beam, the method comprising:

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setting a transmittance of a light reducing member (16) disposed in an optical path of the exposure beam based on at least one target exposure level (column 5 line 48+, figure 5),

wherein the transmittance is determined so as to satisfy a predetermined condition (column 5 line 48+) when exposing a divided region having a minimum (optimum) target exposure level (column 7 line 1+);

adjusting a parameter (exposure of light source or speed of reticle stage) when exposing the divided regions having different target exposure levels without changing (when first and second embodiment is used) the determined transmittance of the light reducing member (column 4 line 48+ and column 5 line 58+).

Regarding claims 2 and 26, Takahashi teaches that said parameter includes a moving speed of the second object during the synchronous movement and an energy of the exposure beam emitted from the pulsed energy source (column 4 line 48+ and column 5 line 58+).

Regarding claim 3, Takahashi teaches that said transmittance of the light reducing member is determined according to the minimum target exposure level in the plurality of exposure levels (column 5 line 48+ and column 7 line 1+).

Regarding claims 4 and 27, Takahashi teaches that said target exposure levels are determined for the plurality of divided regions respectively, according to distances from a center of the second object (figure 2).

Regarding claim 6, Takahashi teaches that said target exposure levels for the

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plurality of divided regions are predetermined by performing a test exposure. (column 7 line 1+).

Regarding claim 8, Takahashi teaches the exposure conditions is related to the number of pulses (15) of the exposure beam directed to the second object.

Regarding claims 9 and 28, Takahashi teaches that the second object is a wafer (figure 1).

Regarding claim 10, Takahashi teaches an apparatus that illuminates a first object with an exposure beam and that successively exposes a plurality of divided regions defined on a second object with said exposure beam (abstract), comprising:

An illumination system having a pulsed light source (1) that generates pulses of an exposure beam and a light attenuator (3 or 16) disposed in a path of the exposure beam;

a stage system having a first stage (44) and a second stage (42), the first stage and the second stage being moved synchronously, and the first object (7) disposed on the first stage and the second object (9) disposed on the second stage;

a memory that stores target exposure levels in a plurality of different levels for a plurality of divided regions defined on the second object wherein a transmittance of the light attenuator is determined so as to satisfy a predetermined condition when exposing a divided region having a minimum (optimum) exposure target level (column 7 line 1+);

a control system (14) that changes an exposure parameter when successively exposing a plurality of divided regions defined on the second object based on the target exposure levels stored in the memory without changing the determined transmittance,

wherein said parameter includes oscillation frequency of the pulsed light source, target energy of each of the pulses emitted from the pulsed light source (column 4 line 48+), and speed of the second stage during the synchronous movement (column 5 line 48+).

Regarding claim 11, Takahashi teaches that said light attenuator has a light reducing member to be provided between said pulsed light source and said second object to switch said transmittance (column 5 line 43+).

Regarding claims 18, 22, 29 and 31 Takahashi teaches that the steps of manufacturing a device including a process for forming a device pattern on a work piece using the exposure method (column 7 line 37+).

Regarding claim 24, Takahashi teaches an exposure method in which a plurality of divided regions having different exposure levels on a second object are successively exposed, the method comprising:

Determining a transmittance of a light attenuator disposed in an optical path of an exposure beam so as to satisfy a predetermined condition when exposing a divided region having a minimum target exposure level (column 7 line 1+); and

Exposing the plurality of divided regions having different target exposure levels on said second object without changing the transmittance of the light attenuator (when method of changing exposure of light source or changing speed of target is used).

Regarding claim 25, Takahashi teaches that the transmittance of the light attenuator is determined so that the number of exposure pulses for the divided region

having the minimum target exposure level is equal to or more than the predetermined minimum number of exposure pulses (column 7 line 1+).

Regarding claim 30, Takahashi teaches an exposure apparatus in which a plurality of divided regions having different target exposure levels on a wafer are successively exposed, the apparatus comprising (abstract):

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Means (13, 14, 15) for determining a transmittance of a light attenuator disposed in an optical path of an exposure beam so as to satisfy a predetermined condition when exposing a divided region having a minimum target exposure level (column 7 line 1+); and

Means for exposing the plurality of divided regions having different target exposure levels on the wafer without changing the transmittance of the light attenuator (when method of changing exposure of light source or changing speed of target is used).

### ***Response to Amendment***

The amendment filed on May 5, 2003 does not include an amended abstract as indicated.

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-4, 6, 8-11, 18, 22 and 24-31 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon K Song whose telephone number is 703-308-2736. The examiner can normally be reached on 8:30 AM - 5 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-4858 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.




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Hoon K. Song  
July 27, 2003

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